

# 2015 Dam Owner Workshop

## Session 1

### Emergency Action Plans for Dams in Texas 'Potpourri'

Presented By: Megan Dutton, P.E.

# Agenda

- Introduction to the Dam Safety Program
- Overview of an EAP
  - What, Why, Who, When, Where, How
- Components of an EAP
- Tabletop Exercises
- Roles/Responsibilities for EAP's
- Tips and Tricks for Dam Owners

# TCEQ Dam Safety Program:

Who We Are

What We Do

# Dam Safety Program

## Who We Are

- Under the Critical Infrastructure Division in the Office of Compliance and Enforcement at the Texas Commission on Environmental Quality
- Mission:
  - To protect the lives, safety, and health of the public from dam failures or improper operation and to preserve the beneficial uses of dams and reservoirs.
  - To reduce these risks with an understanding of the limitations placed by technical, economic, political, and social concerns.
  - Provide Guidance and Recommendations in order to help dam owners protect their investment.

# Dam Safety Program

## Mandated by Law

- Texas Water Code Chapter 12.052
  - (a) The commission shall make and enforce rules and orders and shall perform all other acts necessary to provide for the safe construction, maintenance, repair, and removal of dams located in this state.

Sec. 1.001. PURPOSE OF CODE. (a) This code is enacted as a part of the state's continuing statutory revision program, begun by the Texas Legislative Council in 1963 as directed by the legislature in Chapter 448, Acts of the 58th Legislature, Regular Session, 1963 (Article 5429b-1, Vernon's Texas Civil Statutes). The program contemplates a topic-by-topic revision of the state's general and permanent statute law without substantive change.

# Dam Safety Program Regulations

Texas Administrative Code (TAC) Title 30  
Chapter 299- Dams and Reservoirs

“The TAC is a compilation of all state agency rules  
in Texas”

- Created in 1977 by the Texas Legislature
- Maintained by the Office of the Secretary of State

# Dam Safety Program

- Section Manager- Warren Samuelson, P.E.
- Team Leaders-
  - Johnny Cosgrove, P.E.
  - Debra Rankin, P.E.
  - Jeff Thomas, P.E., P.G.
- 21 Full Time Staff (Engineers, EITs, Technicians)
  - 1 Summer Intern
  - 1 Vacancy

# Dam Safety Program

- Over 7,000 Total Dams in Texas
- Nearly 4,000 Dams Regulated by Dam Safety Program
  - 1,600 High and Significant Hazard, Non-Exempt
- Inspect Dams Every 5 Years

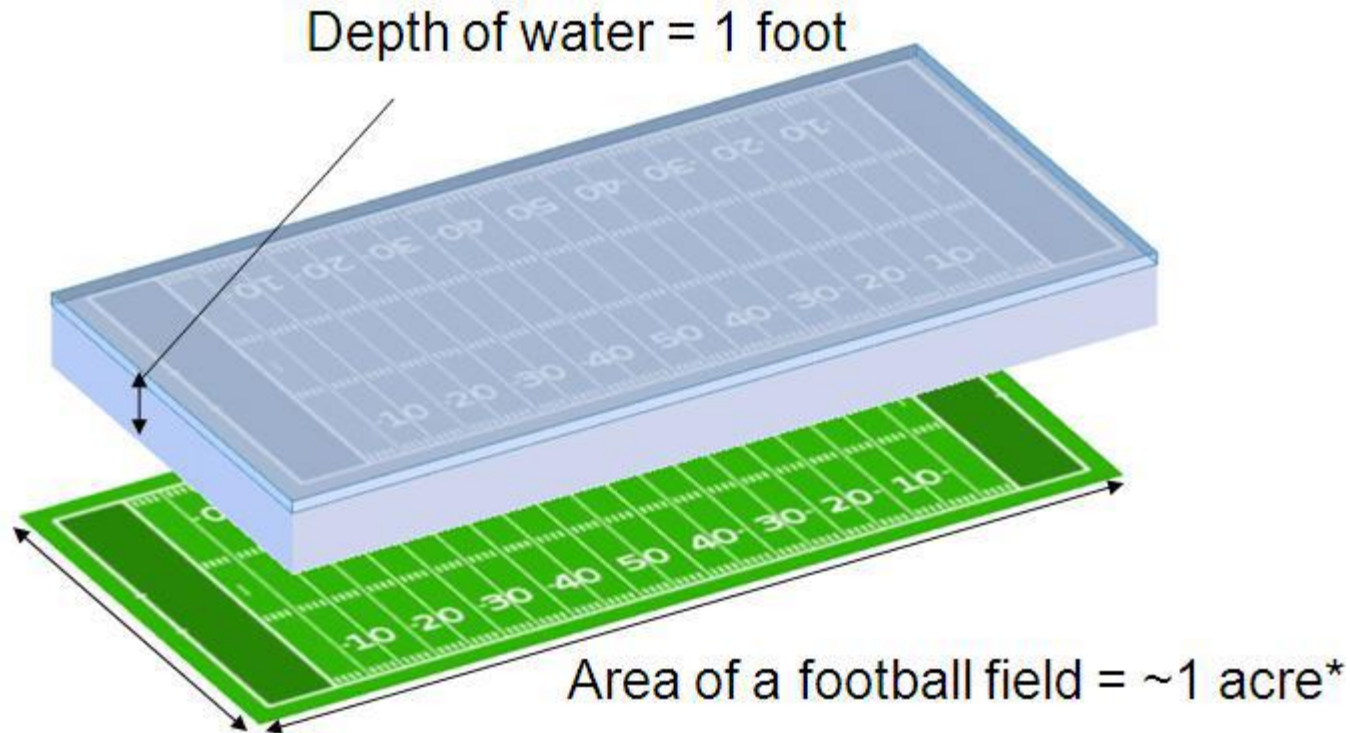
# Dam Exemptions

- Focus on high risk dams.
- Effective September 1, 2013. No expiration date.
- Per Legislation Passed, Exempt Dams Must Meet All 5 Criteria:
  - Privately owned
  - Less than 500 acre-feet maximum capacity
  - Located in a county with population less than 350,000 (per 2010 Census)
  - Located outside city limits
  - Low or significant hazard
- ❖ If you would like to know if your dam is exempt, submit a request in writing (i.e. hard copy letter or email)

# Dam Exemptions

- Exempt dams are not regulated by Dam Safety Program
  - Will not be inspected every 5 years (unless requested by owner)
  - Should continue any maintenance
- Although there is no expiration date, an exempt dam may become non-exempt if any one of the 5 criteria change
  - Would most likely be due to downstream development and hazard classification

# What is an acre-foot?



\*1.3 total acres including end zones, 1.1 acres excluding end zones.

The amount of water covering one acre of surface area to a depth of one foot

# Hazard Classification

Based on potential damage to downstream life,  
property, and infrastructure

NOT based on the condition of the dam

# Hazard Classification

## TAC §299.14

- Low Hazard
  - No loss of human life expected
    - No permanent habitable structures downstream of the dam
  - Minimal economic loss
    - Dams located in rural areas where failure may damage:
      - Occasional farm buildings
      - Limited agricultural improvements
      - Minor highways

# Hazard Classification

## TAC §299.14

- Significant Hazard
  - Possible loss of human life located in the breach inundation area downstream of the dam
    - 1 to 6 lives or
    - 1 to 2 habitable structures
  - Appreciable economic loss
    - Damage to isolated homes
    - Damage to secondary highways (defined by TCEQ)
    - Damage to minor railroads
    - Interruption of service or use of public utilities

# Hazard Classification

## TAC §299.14

- High Hazard
  - Expected loss of life located in the breach inundation area downstream of the dam
    - 7 or more lives or
    - 3 or more habitable structures
  - Excessive economic loss to
    - Public facilities (i.e. water/wastewater plants, pump stations, power transmission facilities, etc.)
    - Agricultural, industrial, or commercial facilities
    - Main highways (defined by TCEQ)
    - Railroads used as major transportation

# Dam Safety Program

## What We Do

- Inspect Dams Every 5 Years
  - Routine, Construction, Complaint, Breached/Failed
- Review H&H Studies and Breach Analyses
- Review Plans and Specifications For New Dams or Dam Modifications/Repairs
- Review Emergency Action Plans
- Attend Tabletop Exercises
- Dam Owner Outreach

# Hydrologic and Hydraulic Study

- Performed by a licensed Texas professional engineer
- Computer program HEC-HMS typically used
- Used to determine the hydraulic adequacy of the dam and its spillways
- Hydrologic criteria for dams found in Texas Administrative Code (TAC) §299.15(a)(1)(A)
- Based on the Probable Maximum Flood (PMF)
  - NOT based on frequency storms (i.e. 100 year storm)

# Breach Analysis

- Performed by a licensed Texas professional engineer
- Computer program HEC-RAS typically used
- Used to estimate the inundation limits if the dam were to breach/fail
  - Resulting map can be used in EAP
  - Can be used to determine hazard classification

# Emergency Action Plans

What, Why, Who, When, Where, How

# Emergency Action Plans

## What

- An EAP is a formal, dynamic document that identifies potential emergency conditions at a dam and specifies preplanned actions and communications to be followed to minimize property damage and loss of life.

# Emergency Action Plans

## Why

- Required by TCEQ Regulations (TAC §299)
- Expedite effective responses to prevent a dam failure
- Prevent property damage and save lives
- Reduce dam owner's potential liability

# Emergency Action Plans

## Who

- All high and significant hazard dams are required to have an EAP
- Exempt dams are not required to have an EAP
  - Although it is a good idea to have one even if not required

# Emergency Action Plans When

- TAC §299 originally had a deadline of January 1, 2011
- Granted extension requests
- No more extension requests- now the Dam Safety Program will work with owners to determine a reasonable deadline

# Emergency Action Plans

## When

- Recurring requirements after EAP is accepted:
  - Annual Updates
    - Send in pages that were updated
    - OR
    - Send in a letter stating no changes were necessary
  - Tabletop Exercises
    - Required at least once every 5 years
    - Will discuss later in presentation

# Emergency Action Plans Where

- Owners may submit EAP's via email or hardcopy
  - Send electronic copy to:  
Megan.Dutton@tceq.texas.gov
  - Send hardcopy to:  
TCEQ Dam Safety Program  
Mail Code 177, P.O. Box 13087  
Austin, Texas 78711-3087
  - For FedEx/UPS/etc:  
TCEQ Dam Safety Program  
12100 Park 35 Circle, Building A, Mail Code 177  
Austin, Texas 78753

# Emergency Action Plans

## Where

- Recommend keeping copy of EAP in an easily accessible location so it may be found quickly during an emergency
  - Some owners have suggested electronic copies
- TCEQ keeps EAP's in locked file cabinets and does not release them to anyone
  - We tell requestors/non-owners if they want a copy of the EAP, it needs to be requested from the dam owner. Dam owners have the right to not release information at their discretion.

# Emergency Action Plans

## How

- *Guidelines for Developing Emergency Action Plans for Dams in Texas (GI-394)*
  - PDF and Word copies on our website  
<http://www.tceq.texas.gov/field/damsafetyprog.html>
- TCEQ Dam Safety Staff will answer any questions and help however they can



# **Guidelines for Developing Emergency Action Plans for Dams in Texas**

**Dam Safety Program  
Critical Infrastructure Division  
Texas Commission on Environmental Quality**

**GI-394  
Revised March 2012**

# EAP Guidelines

- Updated in March 2012
- Major Changes include:
  - Added an additional notification flowchart to address different emergency conditions
  - Removed Ben Weiger as the National Weather Service contact and replaced with a NWS Region
  - Removed Warren Samuelson's office, home and cell number and replaced with general TCEQ Dam Safety numbers
    - Daytime: (512)239-0326 AND 24Hour: (888)777-3186
  - Provided additional guidance for Vicinity and Inundation Maps
  - Additional minor changes

# Old Comment/Acceptance Letters

- EAP acceptance letters were sent out to dam owners without the Approval and Implementation page signed by BOTH the owner and the local emergency management coordinator.
- TCEQ will verify that the signature page was signed when annual updates are received. If there are no signatures, a comment will be made in the annual update acknowledgement letter requesting the signature(s).

# Old Comment/Acceptance Letters

- Around 2009/2010 TCEQ sent some EAP comment letters that stated “..your EAP is now in compliance with TAC Chapter 299..” and others were sent stating that the EAP was accepted but both letters included TCEQ review comments.
- If a letter was sent with comments listed, we ask that owners send in a revised version for further review and acceptance
- Contact TCEQ if you are not sure if you received one of these letters

# Components of an EAP

# EAP Components

Title Page

Notification Flowcharts

Approval and Implementation Page

Purpose

General Description

Responsibilities

Emergency Detection, Evaluation, and Classification

Preventive Actions

Supplies and Resources

Training

Inundation Maps

# Title Page

**[NAME] DAM**

**[TX#####]**

**EMERGENCY ACTION PLAN**

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[Date]

Prepared for

[Name]

Prepared by

[Name]

# Notification Flowcharts

## **Watch Condition**

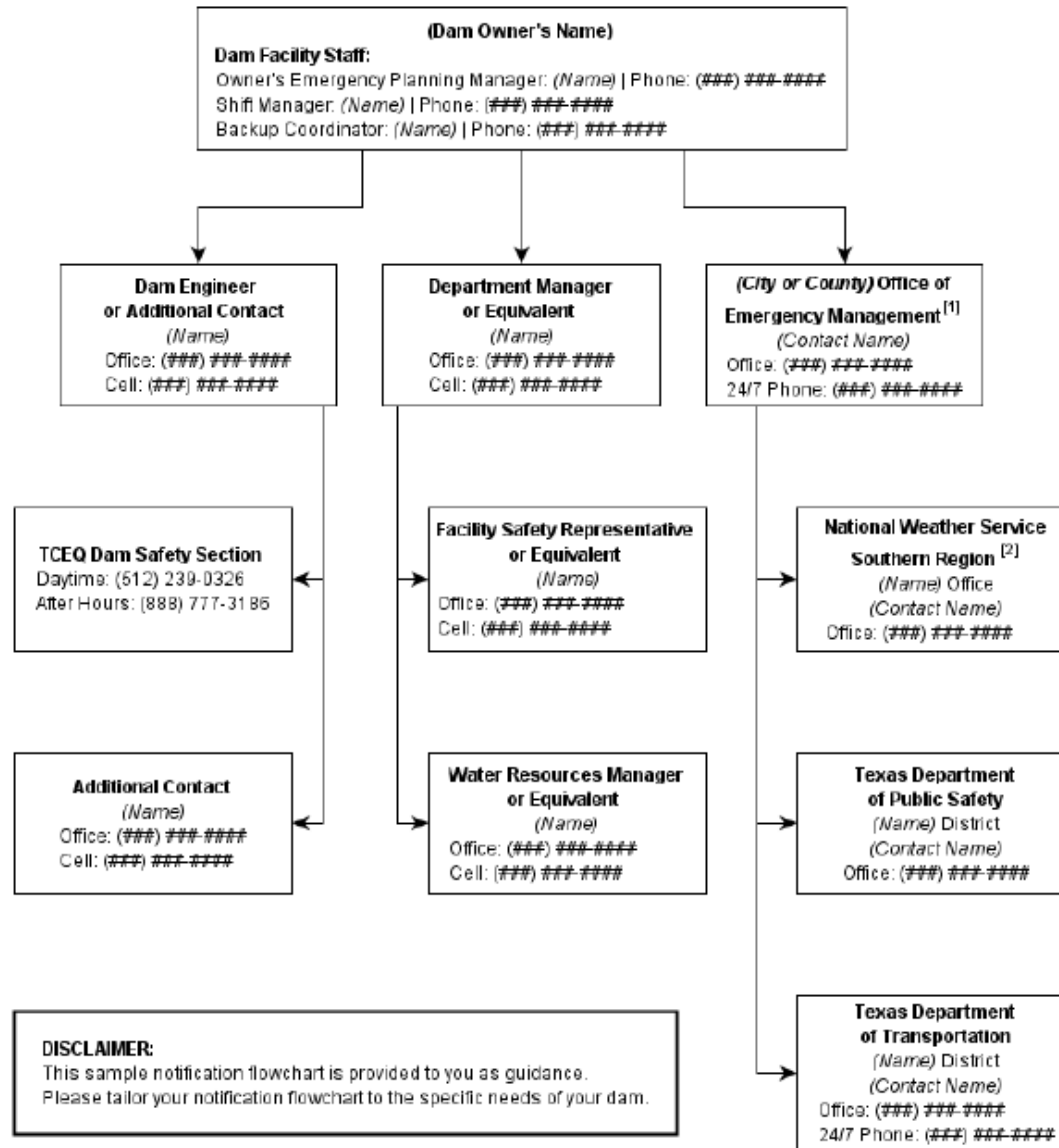
- Intended for internal communication
- No evacuations

## **Possible/Imminent Dam Failure**

- Notify local authorities so they can make evacuations
- Include local news outlets and National Weather Service to get messages out to the public

**\*Include 24-hour contact information for everyone on both flowcharts**

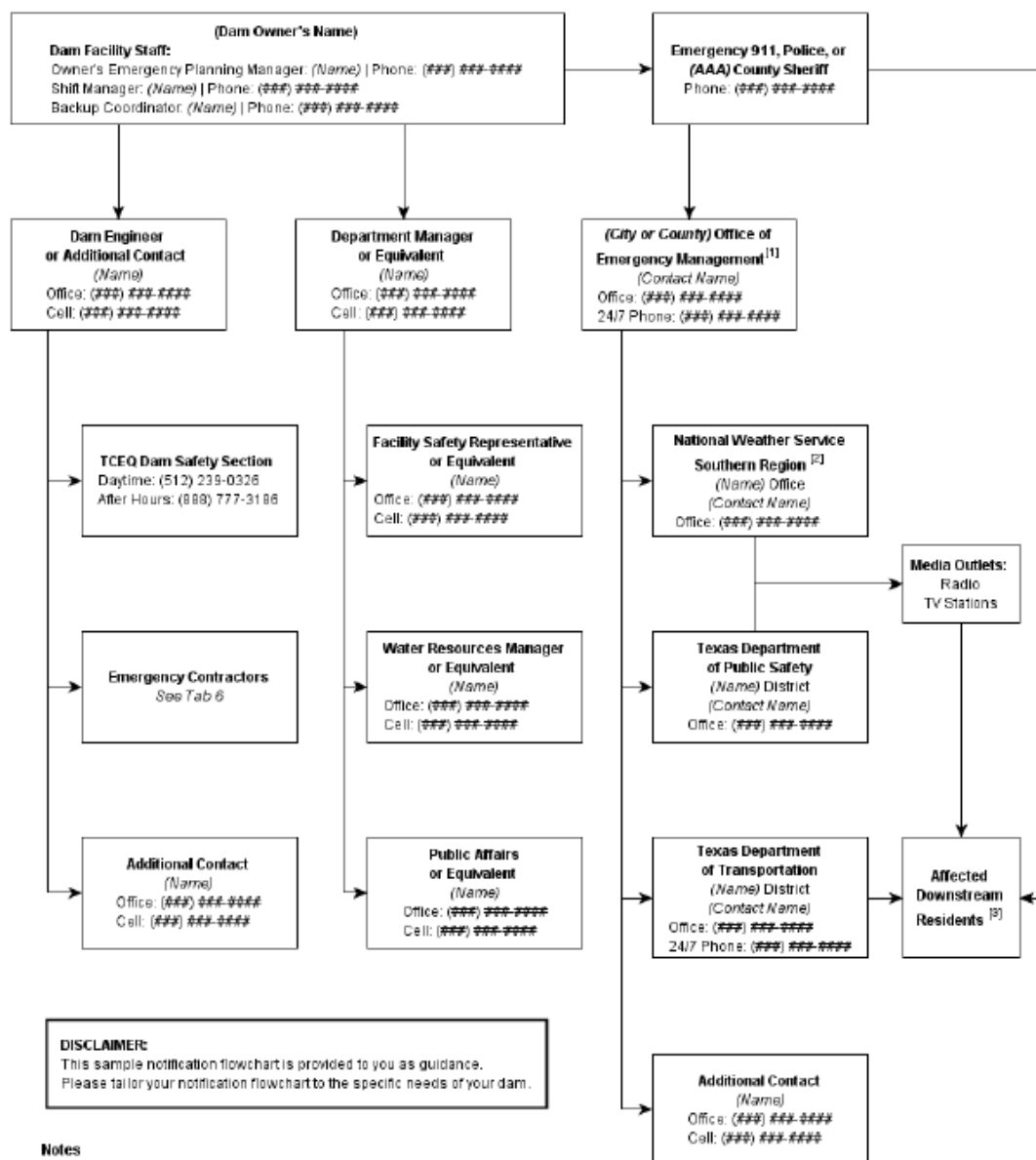
# Watch Condition Notification Flowchart



## Notes

1. Please include contact information for all potentially impacted districts and area offices.
2. Please provide the contact information for your local Weather Forecast Office located in the National Weather Service Southern Region.

## Possible, Imminent, or Dam Failure Condition Notification Flowchart



# Approval and Implementation Page

## **APPROVAL AND IMPLEMENTATION EMERGENCY ACTION PLAN [NAME] DAM, [TX#####]**

This Emergency Action Plan is hereby approved. This plan is effective immediately and supersedes all previous editions.

\_\_\_\_\_  
[Name and Title of Appropriate Manager for Owner]

\_\_\_\_\_  
Date

I have received a copy of this Emergency Action Plan and concur with the notification procedures.

\_\_\_\_\_  
[Name and Title of Emergency management Coordinator]

\_\_\_\_\_  
Date

Required to be signed by both the owner and the local EMC

# Approval and Implementation Page

## Authority

- §299.61(a) requires that “The owners of all high- and significant-hazard dams ... shall prepare an emergency action plan to be followed by the owner in the event or threat of a dam emergency.”
- §299.61(d) indicates that the EAP shall be prepared “using guidelines provided by the executive director or using a format approved by the executive director before the plan is prepared”.
  - The *Guidelines for Developing Emergency Action Plans for Dams in Texas* (TCEQ Publication GI-394, revised March 2012), under Chapter 2, Section 2.8c. Approval, indicate that the EAP should “Include a form on which the dam owner and local emergency management coordinator sign a statement that they have reviewed the EAP and concur with the notification procedures.”

# Purpose

- Identify emergency conditions that could cause a dam failure
- Expedite effective responses during an emergency
- Prevent and/or reduce loss of life and property damage

# General Description

## TAB 3 DAM DESCRIPTION

Official Dam Name <sup>(1)</sup>: \_\_\_\_\_

Dam Location: \_\_\_\_\_

Latitude/Longitude: \_\_\_\_\_

Dam Owner: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Dam Owner's Address: \_\_\_\_\_

### Embankment

Type \_\_\_\_\_ (ex.-earthen embankment)  
Year Constructed \_\_\_\_\_  
Length \_\_\_\_\_ feet  
Maximum Height \_\_\_\_\_ feet  
Top Width \_\_\_\_\_ feet  
Top of Embankment Elevation \_\_\_\_\_ feet-msl  
Drainage Area \_\_\_\_\_ square miles

### Principal Spillway <sup>(2)</sup>

Type \_\_\_\_\_ (ex.-Uncontrolled ogee weir)  
Location \_\_\_\_\_ (ex.-Right abutment)  
Crest Length \_\_\_\_\_ feet  
Crest Elevation \_\_\_\_\_ feet

### Emergency Spillway

Type \_\_\_\_\_ (ex.-Excavated, broad-crested weir)  
Location \_\_\_\_\_ (ex.-Left abutment)  
Crest Length \_\_\_\_\_ feet  
Crest Elevation \_\_\_\_\_ feet-msl

### Inlet-Outlet Works

Type \_\_\_\_\_  
Location \_\_\_\_\_ (ex.-Right end of the dam)  
Invert Elevation (Inlet) \_\_\_\_\_ feet-msl (bottom of pipe)  
Invert Elevation (Outlet) \_\_\_\_\_ feet-msl (bottom of pipe)

### Reservoir

Elev. Top of Conservation Pool \_\_\_\_\_ feet-msl  
Capacity Conservation Pool (Normal Pool) \_\_\_\_\_ acre-feet  
Capacity at Top of Dam (Maximum) \_\_\_\_\_ acre-feet  
Surface Area \_\_\_\_\_ acres

- (1) If the dam is known by more than one name, it is recommended that all names be listed (i.e. Official TCEQ name, City name, common name known by locals, etc.)
- (2) If the dam has multiple spillways, create additional subsections as necessary to include information on all spillways.

# Responsibilities

- Dam Owner's Responsibilities
- Notification
- Evacuation
- Duration, Security, Termination, Follow-Up
- Communications
- Emergency Operations Center

# Emergency Detection, Evaluation, and Classification

## Detection

- Severe Storms/Inclement Weather
- Tornadoes
- Earthquakes
- Sabotage




## Signs of Failure

- Seepage
- Sliding
- Structural
- Overtopping





# Emergency Detection, Evaluation, and Classification

- Watch
  - Possible Dam Failure
  - Imminent Dam Failure
  - Dam Failure
- 
- Same Flowchart

# Watch Condition

- Issue first detected
- Repair issue, if possible
- Monitor the dam
- Downstream residents not notified on flowchart

# Possible Dam Failure Condition

- The 'Watch' condition continues to worsen
- Save the dam
- Consider notifying downstream residents, depending on how much the condition worsens

# Imminent Dam Failure Condition

- Someone has determined that conditions will continue to progress and there will be an uncontrollable release of water from the reservoir
- Save lives
- Notify/evacuate downstream residents

# Dam Failure Condition

- The dam has failed and a flood wave is moving downstream
- Save lives
- Evacuate downstream residents



# Preventive Actions

- Include a routine inspection schedule and identify the person responsible for conducting inspections
  - Important to inspect after significant rain events
- Specify actions to be taken before and after development of emergency conditions to prepare for an emergency (alternate routes, surveillance, dark )
  - Evidence of Distress (Tab 5 in Guidelines template)
- Indicate procedures and measures for timely:
  - Emergency Detection
  - Emergency Evaluation
  - Emergency Classification

**TAB 5**  
**EVIDENCE OF DISTRESS**

General Observation	Specific Observation	Condition	Emergency Action	Equipment, Material and Supplies	Data to Record
Boils	Small boils, no increase of water flow, flowing clear water	Watch	Closely check all of downstream toe, especially in the vicinity of boil for additional boils, wet spots, sinkholes, or seepage. Closely monitor entire area for changes or flow rate increases.	None	Site and location, approximate flow
	Large or additional boils near previously identified ones, without increasing flow rate, but carrying small amount of soil particles	Watch	Initiate 24-hour surveillance. Monitor as described above. Construct sandbag ring dikes around boils, to cover them with water to retard the movement of soil particles. Filter cloth may be used to retard soil movement, but do not retard the flow of water.	Sandbags, filter cloth	Site and location, approximate flow
	Large or additional boils near previously identified ones, increasing flow rate, carrying soil particles	Possible Failure	Continue 24-hour surveillance. Continue monitoring and remedial action as described above. Initiate emergency lowering of the reservoir. Issue a warning to downstream residents.	Sandbags, pump	Site and location, approximate flow
	Rapidly increasing size of boils and flow increasing and muddy water	Imminent Failure	Downstream evacuation. Employ all available equipment to attempt to construct a large ring dike around the boil area.	Dozer, shovels, source of earthfill	Site and location, approximate flow
Seepage	Minor seepage of clear water at toe, on slope of embankment, or at the abutments	Watch	Closely check entire embankment for other seepage areas. Use wooden stakes or flagging to delineate seepage area. Try to channel and measure flow. Look for upstream whirlpools.	Wooden stakes, flagging	Site, location, approximate flow
	Additional seepage areas observed flowing clear water and/or increasing flow rate.	Watch	Initiate 24-hour surveillance. Monitor as described above. Construct measuring weir and channel all seepage through weir. Attempt to determine source of seepage.	Dozer, shovels	Site, location, approximate flow
	Seriously or rapidly increasing seepage, underseepage, or drain flow.	Possible Failure	Continue 24-hour monitoring and remedial action as described above. Initiate emergency lowering of the reservoir. Construct a large ring dike around the seepage area.	Dozer, shovels, source of earthfill	Site location, approximate flow
	Additional seepage areas with rapid increase in flow and muddy water.	Imminent Failure	Downstream evacuation. Employ all available equipment to attempt to construct a large ring dike around the seepage area.	Dozer, shovels, source of earthfill	Site location, approximate flow

# Supplies and Resources

**TAB 6**  
**SUPPLIES AND RESOURCES**

The following equipment and supplies may be necessary for use during a dam emergency. Contact information for local contractors who can provide the following items during an emergency is listed below. For supplies owned by the dam owner, the dam owner's name and the specific location of the supplies have been denoted.

EQUIPMENT/SUPPLIES	LOCATION
Backhoes Dump trucks Portable welding equipment Generators Bulldozers Excavators Loaders Motor graders	[Names, addresses, and phone numbers of contractors]
Crane	[Names, addresses, and phone numbers of contractors]
Sandbags	[Names, addresses, and phone numbers of suppliers]
Rock riprap	[Names, addresses, and phone numbers of suppliers]
Fill Material	[Names, addresses, and phone numbers of suppliers]
Other - _____	[Names, addresses, and phone numbers of suppliers]

Important to establish list before an emergency  
High demand of supplies and resources during a flood event

# Training

## **TAB 7** **ANNUAL EAP EVALUATION CHECKLIST**

Was the annual dam inspection conducted?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, has the EAP been revised to include any signs of failures observed during the inspection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Was brush clearing, animal burrow removal, or other maintenance required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe actions taken and date:	
Was the outlet gate operable?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, describe actions taken and date:	
Do the Notification Flowcharts require revision?  (Note that revision of the contact information will not require EAP approval; however, the revised contact information pages will need to be redistributed as a replacement pages.)	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, list the dates of the contact information revision and redistribution:	
Was annual training or an exercise conducted?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Circle: training    exercise Date conducted:	
Are inspection and training records included in the EAP?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Was the EAP reviewed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, review date:	
Were changes required to the EAP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, date of revised EAP approval:	

\_\_\_\_\_  
[Name and Title of Appropriate Manager for Owner]

\_\_\_\_\_  
Date

# Training

## **TAB 8**

### **PLAN REVIEW AND UPDATE**

This plan will be reviewed and updated annually and table top exercises will be conducted at least once every five years. Document these reviews below.

Date of review: \_\_\_\_\_

Participants: \_\_\_\_\_

Date of review: \_\_\_\_\_

Participants: \_\_\_\_\_

Date of review: \_\_\_\_\_

Participants: \_\_\_\_\_

Date of review: \_\_\_\_\_

Participants: \_\_\_\_\_

Date of tabletop exercise: \_\_\_\_\_

Participants: \_\_\_\_\_

# Training

## **TAB 9** **TRAINING RECORD**

Use this form to record training sessions. File the completed form in the appropriate Tab of the EAP. All items in the EAP should be thoroughly reviewed during training. Appropriate [Owner] employees and EAP team members should attend a training session annually (or participate in a simulated exercise).

TRAINING LOCATION	
DATE:	TIME: INSTRUCTOR:
CLASS SIGN-IN:	
Type of Simulation Conducted:	Circle Emergency Type: Emergency water release Watch condition Possible dam failure Imminent dam failure Actual dam failure
Comments, Results of Exercise:	
Revisions Needed to EAP Based on Results of Exercise? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list revisions required:	

# Inundation Maps

- Required for every EAP
- Depicts areas that could potentially flood if the dam fails
- Used for evacuation planning by the local authorities
  - It is critical that local authorities review and provide input on necessary content and map scale
- Level of detail depends on the size of the dam and complexity of the floodplain
  - General
  - Detailed

# Inundation Maps

- Requirements for all maps:
  - Label the dam
  - Label all applicable street names
  - Include north arrow and scale bar
  - Use aerial image (such as Google or Bing)
  - Label potential hazards
    - Provide resident names, address, phone number if able to
  - Annual Updates should address any changes in downstream development

# Detailed Inundation Map

- Determined after a PE conducts a breach analysis
  - Breaches are generally required when hazards are not easily identified or a dam failure could impact densely developed area
- Include a note that states “Because of the method, procedures, and assumptions used to determine the flooded areas; the limits of flooding shown and flood wave travel times are approximate and should be used only as a guideline for establishing evacuation zones. Areas inundated in an actual event will depend on actual failure conditions and may differ from areas shown on the maps.”

NOTE- The dam breach is based on the Probable Maximum Flood, which is NOT the same as the FEMA floodplain map or the 100-year floodplain

Sunny Day Breach PMF Breach

Sheet 1

is impacted  
immediately after the  
Sunny Day breach

is impacted  
30 minutes after the  
Sunny Day breach

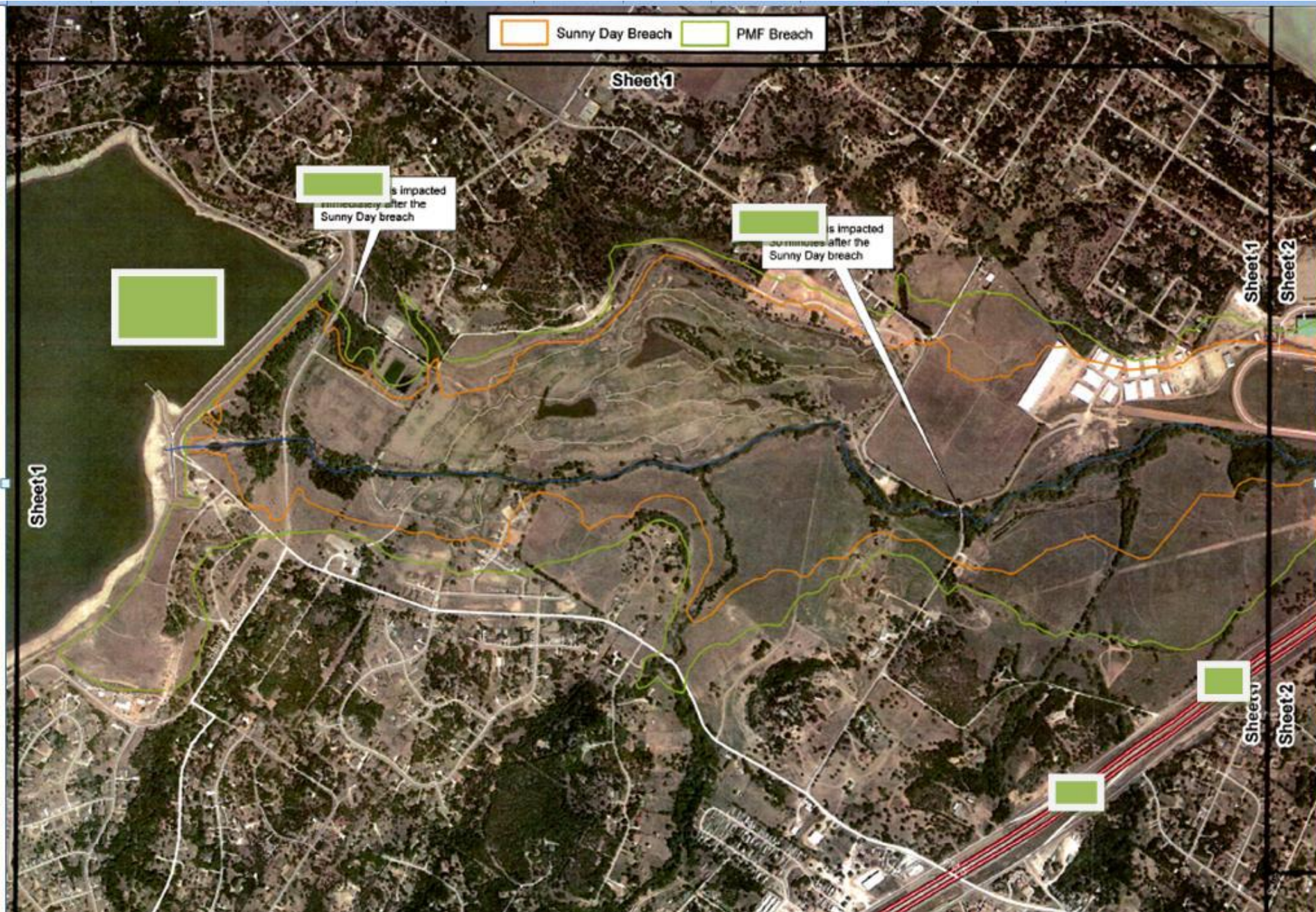
Sheet 1

Sheet 2

Sheet 1

Sheet 1

Sheet 2



# Detailed Inundation Map

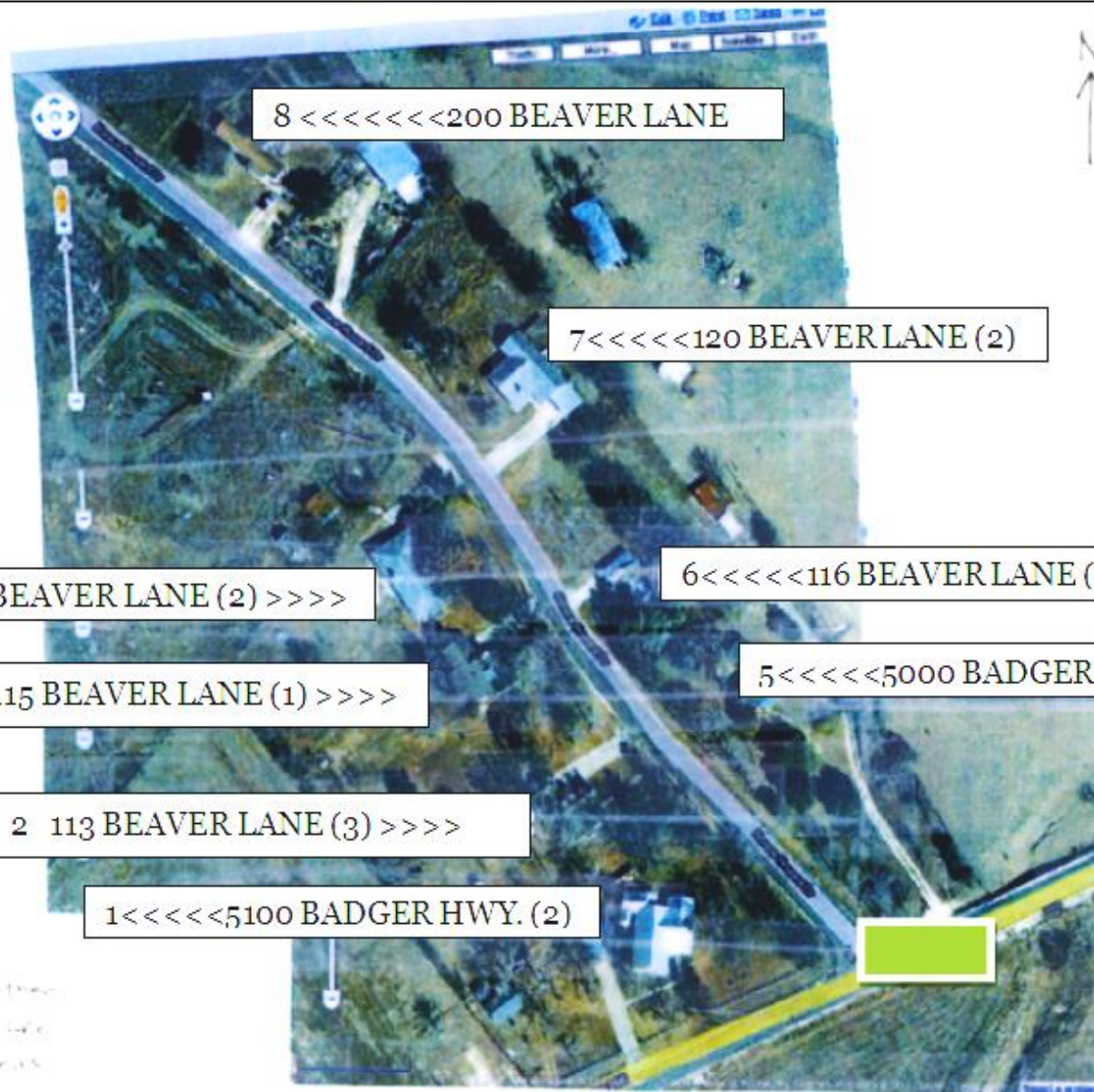
## Breach Analysis

- Final result of a breach analysis is the inundation area
- Won't change unless significant changes/modifications to dam
- Owners should get the resulting 'shape file' of the inundation area for use in future EAP updates (especially in areas that expect downstream development)

# Generalized Inundation Map

- Best used when there are a limited number of potential hazards known (about a dozen or so).
- Can be used for High Hazard dams with a small, concise inundation area.
- Be cautious not to identify too many hazards just to be conservative. Not efficient for emergency services and personnel.

TAB 2. LOCATION OF  
INFORMATION ON CURRENT  
DOWNSTREAM RESIDENTS



# Tabletop Exercises

# Failing to Plan is Planning to Fail



# Tabletop Exercise Requirement

- §299.61(h) indicates that “The owner shall perform a table top exercise of the emergency action plan on the frequency provided in the owner’s emergency action plan, or at least every five years. A table top exercise is a meeting of the owner and the state and local emergency management personnel in a conference room setting.”

# Why Are Exercises Important?

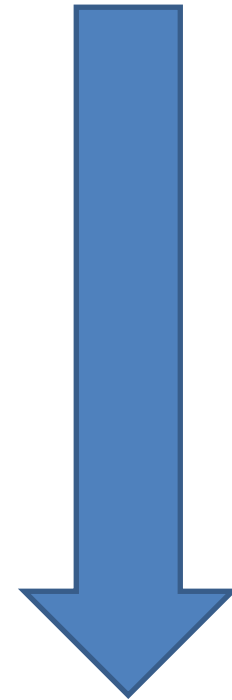
- Comply with States Rules and Guidelines
- Reduce owner's potential liability
- Meet key players
- Confirm names, positions, contact information
- Establish clear lines of communication
- Identify unforeseeable problems
- Reduces false alarms

‘An EAP is not worth the paper it’s  
printed on unless it works’

# Types of Exercises

- Orientation Seminar/Workshop
- Drill
- Tabletop Exercise
- Functional Exercise
- Full-Scale Exercise

Less Involvement



More Involvement

# What is a Tabletop Exercise

- Informal meeting of key players involved with the EAP.
- A hypothetical (but possible) scenario is provided and emergency actions/procedures are then discussed.
- Focused more on problem-solving than decision making.

# Benefits of a Tabletop Exercise

- All responsible parties are together
- Informal meeting with low stress
- EMC can determine best available evacuation routes
  - Will flooding block important access roads or evacuation routes?
- Problems/issues with EAP are found and fixed that day
- Required by TCEQ

# How to Put Together a Tabletop Exercise



# 10 Steps to Put Together a Tabletop Exercise

Step 1: Decide Who Will Facilitate/Moderate and Decide What Type of Exercise Will Be Performed

Step 2: Determine Who Should Attend

Step 3: Develop Mock Scenario

Step 4: Dry Run Scenario

Step 5: Contact Attendees

Step 6: Arrange for Meeting Space

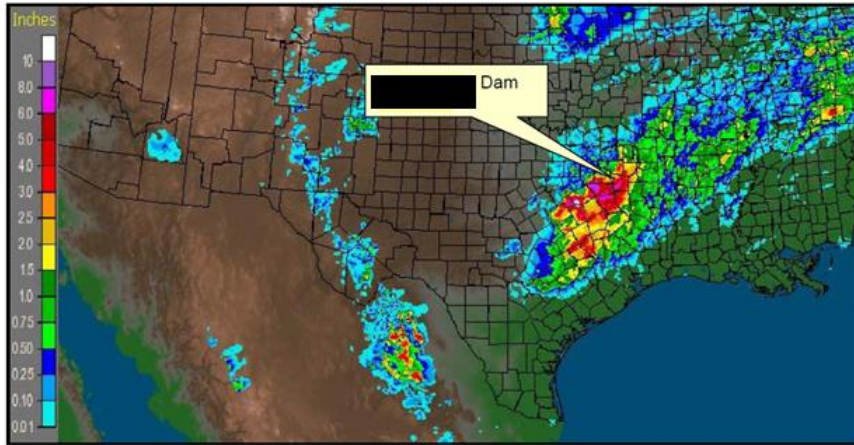
Step 7: Develop Agenda

Step 8: Review Dam Data

Step 9: Review Inundation Maps

Step 10: Review EAP

# Example Mock Scenarios



# Sample Tabletop Exercise Agenda

- Introductions
- EAP and Dam Overview
- Inundation Map Overview
- Describe and Discuss Scenario
- Describe And Discuss Actions And Procedures, Especially As They Pertain To Specific Personnel
- Discuss Strengths, Weaknesses, Improvements, Etc. With The EAP

# After the Tabletop Exercise

- Owner should implement any changes found and discussed during the exercise
- Any changes/modifications should be submitted to the distribution list in the EAP
- Remember to schedule the next exercise in at least 5 years

# Roles and Responsibilities for EAP's

# Responsibilities

## Dam Owner

Write EAP

Operation and  
Maintenance of Dam

Detect a  
Problem/Emergency  
Situation at the Dam

Decision  
Making/Notification of  
Emergency Response  
Agencies

## TCEQ

Review and Accept  
EAP

Provide Aide as  
Needed/Able

Follow-Up

## EMC

Sign EAP/Acknowledge  
Roles and Responsibilities

Issue Warnings to Affected  
Area(s)

Evacuations, as Necessary

Coordination With  
Additional Emergency  
Response Agencies, as  
Necessary

# Tips and Tricks for Dam Owners

# Writing An EAP

- Use the Word template provided on the TCEQ Dam Safety Website
- Easy to 'Cut and Paste' dam/owner information

<http://www.tceq.texas.gov/field/damsafetyprog.html>

# Multiple Dam EAP's

- If an owner owns multiple dams that will require an EAP:
  - The owner can have 1 EAP that covers multiple dams as long as the notification flowcharts are the same. Specific information for each dam will still be required (i.e. dam information page, vicinity map, and inundation map).

# Multiple Dam Tabletop Exercises

- Owners may hold 1 Tabletop Exercise that covers multiple dams as long as the personnel involved are the same.
- Beneficial since all key players will be present at once. No need to hold several tabletops for the same audience.

# Have Someone You Trust

- During an emergency, it is useful to have someone who you trust verifying the information at the dam.
- It is helpful for them to be familiar with the dam and its appurtenances (i.e. spillways).



**DISCUSSION/  
QUESTIONS?**

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